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All in it together? The effects of recession on population health and health inequalities in England and Sweden, 1991 to 2010.

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All in it together? The effects of recession on population health and health inequalities in England and Sweden, 1991 to 2010.

Abstract

This paper is the first to comparatively examine the effects of two recessions on population health and health inequalities in the two historically contrasting welfare states of England and Sweden. Data from 1991-2010 on self-reported general health, age, gender and educational status were obtained from the Health Survey for England, the Swedish Survey of Living Conditions and the European Union Survey of Income and Living Conditions, for individuals aged over 16. Generalised linear models were used to test the effects of recessions on self-reported health and educational inequalities in health. Overall, recessions had a significant positive effect on the health of women - but not men - in both England (4%) and Sweden (7%). In England, this improvement was only enjoyed by the most educated women with the health of less educated women declining during recession. In contrast, in Sweden, the health of all women improved significantly during recession regardless of their educational status, although the most educated benefitted the most. Relative educational inequalities in self-reported health therefore increased during recessions in both countries by 14% (England) and 17% (Sweden) but for different reasons. This study suggests that Sweden's welfare state protects the health of all during recessions.

Abstract word count = 198

Introduction

National economic wealth has long been considered as the major global determinant of population health, with the vast differences in mortality between the developed and developing countries accounted for in terms of differences in economic growth. Indeed, the World Health Organisation Commission on the Social Determinants of Health (2008) concluded that *“a toxic combination of bad policies, economics, and politics”* was responsible for global health inequalities. Changes in the economy therefore potentially have important implications for population health and health inequalities. However, to date there have been few comparative studies of the effects of recessions on health and how they may differ by social policy context. Studies examining the effects on socio-economic and gender inequalities are even fewer. This study is the first to compare the population health effects of recessions in England and Sweden and whether there are any effects on health inequalities using data from both the early 1990s recession and the post-2007 ‘Great Recession’.

Recessions and Health

Recessions are characterised by instability (in terms of employment, inflation and interest rates) and sudden reductions in production and consumption with corresponding increases in unemployment. For example, the ‘Great Recession’ after the financial crisis of 2007 is characterised by unemployment rates of 8.5% in the UK and the USA, 10% in France and over 20% in Spain (Bambra, 2011). Evidence suggests that economic recessions have detrimental health effects for those losing jobs or in fear of losing their jobs (Neumayer, 2005). More generally though, the epidemiological literature suggests that the population

health effects of recessions are rather mixed (Bambra, 2011) with the majority of international studies concluding that all-cause mortality, deaths from cardiovascular disease and from motor vehicle accidents and hazardous health behaviours *decrease* during economic downturns, whilst deaths from suicides, rates of mental ill health and chronic illnesses *increase* in some - but not all - countries (Stuckler and Basu, 2013).

Unemployment increases during recessions and it is strongly associated with an increased likelihood of morbidity and mortality (Bambra, 2011). In particular, unemployment has been associated with increased mental health problems such as depression and stress (Jahoda, 1982; Janlert, 1997; Montgomery *et al.*, 1999; Hagquist *et al.*, 2000; Jefferis *et al.*, 2011; Strandh *et al.*, 2013), suicide and parasuicide (Platt, 1986; Jones *et al.*, 1991; Newman and Bland, 2007; Bunn, 1979; Amick and Brenner, 1995; Lewis and Sloggett, 1998; Osler *et al.*, 2003; Voss *et al.*, 2004), sleep difficulties and psychosomatic complaints (Hyypä *et al.*, 1997; McKee-Ryan *et al.*, 2005). There is also evidence of unemployment and social hardship having a negative effect on the mental health of children (Mistry *et al.*, 2002; Solantaus *et al.*, 2004). Unemployment has been shown to be associated with an increase in health related behaviour risks such as smoking and excessive alcohol consumption (Eliason and Storrie, 2009; Falba *et al.*, 2005; Kriegbaum *et al.*, 2011; Montgomery *et al.*, 1999). Evidence also suggests that unemployment is associated with increased physical health problems including higher rates of self-reported limiting long-term illness (Bambra and Eikemo, 2009; Bartley and Plewis, 2002; Bartley *et al.*, 2004; Möller *et al.*, 2013; Ostrove and Adler, 1998; Popham and Bambra, 2010) and longer recovery times from illness (Bartley *et al.*, 2004; Dorling, 2009). For example, two recent studies in Sweden (Eliason and Storrie, 2009; Lundin *et al.*, 2010) and a further study looking at the US and five European countries

(van Lenthe *et al.*, 2005), found all-cause mortality rates increased following job loss. Death from cardiovascular disease was also found to be associated with unemployment in Scotland (Bremner, 1987) and in Sweden (Sundquist *et al.*, 2006).

Recessions are also characterised by an increase in job insecurity and 'precarious' employment with increasing numbers of people working on either temporary contracts or no contracts, with limited or no employment or welfare rights. Precarious employment is associated with stress, fatigue, backache and muscular pains, job dissatisfaction and absenteeism (Benavides *et al.*, 2000), poor occupational health outcomes (Quinlan *et al.*, 2001), psychiatric morbidity and health-related behaviours (Ferrie *et al.*, 2002), and mortality (Kivimäki *et al.*, 2003). For example, Kivimäki and colleagues' (2003) analysis of Finnish longitudinal data, found that overall mortality was shown to be more than 20% higher in temporary employees when compared with those employees on a permanent contract. Further, mortality from alcohol-related causes was increased for both men and women temporary workers when compared with permanent workers (men hazard ratio [HR] = 2.0, 95% CI 1.4 to 2.9; women HR = 1.7, 95% CI 1.1 to 2.5). Mortality from smoking related cancer was higher amongst male temporary workers only (HR = 2.8, 95% CI 1.3 to 6.0).

However, beyond the job insecurity and unemployment literature, research into the wider effects of recessions on health appears to show conflicting results. A number of researchers have found that health deteriorates during periods of recession. For instance, Katikireddi *et al.*'s (2012) recent study using the Health Survey for England found that the self-reported mental health of men in England, measured by the General Health Questionnaire (GHQ12)

scores, deteriorated over the two years following recession, however the same was not seen for women. Nettleton and Burrows (1998), study exploring the early 1990's recession using the British Household Panel Survey however, found that both men and women suffered greater self-reported ill health, particularly mental health problems. Mental health problems such as stress and depression were also found to increase during periods of recession in studies in Spain (Gili *et al.*, 2012), Greece (Economou *et al.*, 2011) and Northern Ireland (Houdmont *et al.*, 2012). In a number of studies this was found to lead to an increase in mortality rates during periods of recession, particularly from suicide (Barr *et al.*, 2012; Chang *et al.*, 2009; Economou *et al.*, 2008, 2011; Hopkins, 2006). However it is not just the mental health of individuals that is affected by recessions, Gerdtham and Johannesson (2005) found all-cause mortality increased significantly during periods of recession for Swedish men (although the findings were not replicated for Swedish women) and a number of studies worldwide found the self-related health status of individuals worsened during times of recession (Kondo *et al.*, 2008; Zavras *et al.*, 2012).

Conversely, there are also a number of studies contradicting these findings and suggesting that recessions are in fact 'good for health'. For instance, Gerdtham and Ruhm's (2006) study of 23 OECD countries from 1960 to 1997 found mortality rates rose during periods of economic growth. Tapia Granados's (2005) study of mortality trends in the United States found that the overall decline in mortality rates in the 20th century actually reversed during periods of recession. One potential explanation of this inverse relationship between mortality rates and recession is given by Adams (1981), who suggests higher unemployment rates leads to a decrease in business activity and therefore a reduction in work-related deaths, combined with a reduction in alcohol and tobacco consumption as incomes reduce, resulting in a reduction in mortality risks. A number of studies also found road traffic

accidents decreased during periods of recession, as people have less need to - and are less able to afford to - drive (Ruhm, 2000, 1995; Tapia Granados, 2005).

Recessions and Health Inequalities

The gap in health outcomes between genders has narrowed considerable over the past decades (Mitchell *et al.*, 2000) and women have become more active in the labour market. However there continues to be evidence of greater effects of unemployment and recession on the health of men compared to women (Eliason and Storrie, 2009; Gerdtham and Johannesson, 2005; Sundquista *et al.*, 2006). Eliason and Storrie (2009) suggest that this may be because *“women traditionally have placed less importance on work relative to, for example, family life”* and have therefore been buffered against the psychosocial effects of unemployment. However, a study by Bartley, Sacker *et al* (2004) found that gender differences were stratified by social class; with greater disparities between genders found where there was a lack of education, in routine occupations or within lower income groups. Studies that have examined whether the health effects of recessions vary by gender have been few and the results varied. For example, Gerdtham and Johannesson (2005) found that recessions increased all-cause mortality in Swedish men, but there was no significant increase in Swedish women. However, Strandh *et al* (2012) found that in Ireland, unemployment was associated with greater mental health problems in men compared to women, whilst men and women were equally affected in Sweden. However, Novo and colleagues (2000a) study of young adults in Japan found that in fact women suffered worse self-reported health than men during recessions. They also replicated these findings in a similar study in Sweden (Novo *et al.*, 2001). Equally Burstöm and colleagues (2012) study of individuals following the recession of the early 1990's found an increase in limiting long-

term illness, sickness absence and rates of disability pension among women, particularly those in the lowest socioeconomic group.

Growing social disparities in health outcomes by socio-economic status have been well documented (Buck and Frosini, 2012; Knopf *et al.*, 1999; Marmot Review, 2010; Meier and Ackermann-Liebrich, 2005; Riva and Curtis, 2012). However, very few studies have actually examined the effects of economic recessions on socio-economic health inequalities. Kondo and colleagues (2008) study of Japan found that non-manual workers were more likely to report poor health than those from high class occupations following an economic crisis. Anitua and Esnaola's (2000) study of self-reported health outcomes in Spain found inequalities between social classes also widened during periods of recession. In contrast, a comparative project of morbidity in Finland (Manderbacka *et al.*, 2001), Norway (Dahl and Elstad, 2001), Sweden (Lundberg *et al.*, 2001a, 2001b) and Denmark (Lahelma *et al.*, 2002) found that both relative and absolute educational inequalities in self-reported health remained stable during the 1980s and 1990s (Lahelma *et al.*, 2002) despite significant periods of recession and welfare state reform (including tax increases, cuts in public spending per capita on welfare services, decreased value of benefits). However a possible explanatory factor in this may be seen in Payne *et al.*'s (2008) study of psychological health during unemployment in the UK, which found that differences in psychological health outcomes between social classes diminished as the time unemployed increased.

Welfare states, Recessions and Health

There have also been few studies that examine recessions and health in a comparative way to see if there are variations in the health effects of economic recessions by national policy

context: most studies have examined single cases only (Ruhm 2005). Exceptions to this include the recent work of Stuckler and Basu (2013) who found that the population health effects of recessions vary significantly by policy context with those countries (such as Iceland or the USA) who responded to the financial crisis of 2007 with an economic stimulus, faring much better - particularly in terms of mental health and suicides - than those countries (e.g. Spain, Greece or UK) who chose to pursue a policy of austerity (public expenditure cuts to reduce government debt). Similarly, Hopkins and colleagues (2006) found that in Thailand and Indonesia where social welfare spending was decreased during the Asian recession of the late 1990s, mortality rates increased. However, in Malaysia where no cut backs occurred, mortality rates were unchanged (Hopkins 2006). Equally, Stuckler *et al's* (2009) study of 26 European countries concluded that greater spending on social welfare could considerably reduce suicide rates during periods of economic downturn.

The health effects of recessions may well therefore be experienced quite differently by otherwise similar individuals and communities due to national policy variation (Burstrom *et al.*, 2010; Whitehead *et al.*, 2000). For example, a comparative study of unemployment and health in Europe found that whilst there was a universal association between unemployment and poorer self-reported health, the strength of the relationship varied by country and welfare state regime (Bambra and Eikemo, 2009). Similarly, a study of unemployment and health in the UK, Germany and the USA concluded that social policy provision buffered the health effects of unemployment (Rodriguez, 2001). Further, a Scandinavian study of the 1990s recession concluded that the more generous social provision in these countries minimised the negative health effects of the recession, especially in terms of health inequalities (Lahelma *et al.*, 2002).

These findings are also in keeping with the wider political economy literature which has shown that population health indicators (including self-reported health, life expectancy as well as infant mortality rates) vary by type of welfare state (Bambra, 2007; Chung and Muntaner, 2007; Dahl *et al.*, 2006) with the more generous and encompassing *Social Democratic* welfare states enhancing population health (especially infant mortality rates). England and Sweden have very differing social policy regimes and histories. The UK is usually seen as an example of a Liberal welfare state, where *“the state provision of welfare is minimal and benefits have strict entitlement”* (Esping-Andersen, 1990). Although there is provision of some welfare for the poorest in society, this merely reduces inequalities amongst the poor, while health and social disparities between the richest and poorest in society persistently grow. Active labour market policies are more recent and focus on those in long-term unemployment. In contrast, Sweden is often seen as an ideal-type example of a Social Democratic welfare state regime reflecting a post-war history in which *“the principals of universalism and the decommodification of social rights are not limited to the poorest but extended across the working and middle classes”* (Esping-Anderson, 1990). Social security benefits are more generous and there is a more extensive use of active labour market programmes which helps people to retrain where necessary and find employment more quickly (Jørgensen, 1997). There is also more emphasis on income protection. As such, income inequalities are smaller in Sweden – although they have grown since the 1990s. In 1990, Sweden spent more than double the amount per head of population on social protection than England. However, it does need to be noted that the welfare states of both countries have experienced considerable change since the 1990s with significant reductions in social expenditure, the marketization of some public services such as health care, and

increased restrictions on eligibility for social support. Nonetheless, in 2009, England still spent almost a quarter less per person on social protection than Sweden (OECD, 2013).

This paper builds on this rich literature by being the first to comparatively examine the effects of the two most recent international recessions of the early 1990s and the post-2007 ‘Great Recession’ on population health and health inequalities in the historically contrasting welfare states of England and Sweden. The early 90’s recession affected the two countries in differing ways; in Sweden the government’s response to the recession was to cut public expenditure and privatising some services whilst introducing measures to boost private sector employment (Burström *et al*, 2012) whilst in England the government’s response was to introduce deep cuts to public expenditure, including welfare spending, whilst doing little to boost employment rates (Scott-Samuel *et al*, 2014). Similar divergent responses were seen in both countries in the latter recession.

Research Questions

1. What effect, if any, do recessions have on the health of men and women in England and Sweden?
2. What effect, if any, do recessions have on socio-economic inequalities in health amongst men and women in England and Sweden?

Methods

Data

This study uses data from the Health Survey for England (HSE) from 1991 to 2010 and from the Swedish Living Conditions Surveys (ULF) 1991 to 2005 and European Union Statistics on Income and Living Conditions (EU-SILC) 2005 to 2010. ULF and the EU-SILC surveys are the same survey, although the method of delivery changed in 2005 from face to face interviews to telephone interviews, with little change to the question format. Both the HSE and ULF/EU silk surveys are carried out annually using a stratified random sample of the population designed to be representative of the whole adult population. Details of the HSE can be found at <http://www.esds.ac.uk/government/hse/> and ULF/SILC at http://www.scb.se/Pages/Product_12187.aspx. All Children under the age of 16 were excluded from this study, along with full-time students. This gave a total of 217,514 individuals for England and 184,428 for Sweden. The HSE data contained data on the year and month the individual was interviewed, whereas the ULF/SILC data only contained data on the year the individual was interviewed. Self-reported health was chosen to represent the health of individuals as this was consistent across both data sets (where as limiting long-term illness was omitted in some years of the HSE).

Socio-economic status was measured using the highest level of education as this variable was consistent over both the Swedish and English data sets. There is a strong relationship between education level, social class and population health (Marmot Review, 2010). Education level is often recognised as being a more accurate measure of socio-economic

status than social class because it can be easily determined for most individuals and because it is usually determined in early life it is less likely to be impacted by health problems that may emerge as aging occurs, which in turn may impact on the social class of an individual (Elo and Preston, 1996). Data from the HSE and the ULF/SILC were dichotomised to three categories to match each other: primary and lower secondary education (no qualifications), upper secondary education (further education) and post-secondary education (higher education), categorised in this study as lowest, intermediate and highest education groups. A further 8270 records (3.9%) in England 1194 records (0.8%) in Sweden had data missing for the educational qualification question.

Health problems are known to increase with age (Crimmins and Beltrán-Sánchez, 2011; Galenkamp *et al.*, 2012; Parker *et al.*, 2005) so age was controlled for in all the models. As there are gender inequalities in health, gender was also explored in the models.

Gross Domestic Product (GDP) was chosen to represent the economic climate at the country level (England and Sweden). Recessions are globally defined as two successive quarters of negative growth in GDP (Oxford Dictionaries, 2012). Quarterly and annual GDP data covering 1988 to 2011 for the United Kingdom (UK) and Sweden was obtained from the Organisation for Economic Co-operation and Development (OECD)(Organisation for Economic Co-operation and Development 2012). Data on the annual GDP was then linked to the HSE and ULF/SILC data sets using the year of interview.

Analysis

Data was measured simultaneously to the recessions occurring and with a one and two year cumulative lag post exposure to the recession. No significant change was noted for the lag effects therefore only the results of simultaneous exposure to recession are reported in the main paper, whilst the lag effects can be seen in the Web Appendix. Self-reported general health status was chosen as the outcome variable. Respondents were asked to rate their general health as 'excellent, 'good, 'fair', 'poor' or 'very poor'. This was then dichotomised into two responses; 'not good health' (fair, bad or very bad health), or 'good health' (good or excellent health). A total of 2500 records (1.2%) in England and 42,454 records (23%) in Sweden had data missing for self-reported general health status. Analysis of the missing data in Sweden found no significant differences in terms of demographic characteristics between respondents and non-respondents. Records with missing data on self-reported health status were not included in the analyses. Age adjusted prevalence of 'not good health' were produced by year and graphed for England and Sweden over the percentage change in GDP. Age adjusted generalised linear models were used to investigate the differential effect of recessions on health for each country. Two different models were fitted based on the objectives of the study; the first model investigates the effect of recessions on the health of men and women in England and Sweden whilst the second model investigates the effect of recessions on socio-economic inequalities in health amongst men and women in England and Sweden. Separate models were conducted by period of recession versus non-recession for England and Sweden.

Results

Recessions and self-reported health in England and Sweden

Figure 1 shows the economic conditions by quarter for the years 1990 to 2010 for both England and Sweden. Both England and Sweden have two distinct recession periods, 1990/91 and 2008/09 in England and 1991/92 and 2008 in Sweden, with Sweden having deeper recessions on both occasions. In the interim periods between the recessions, the economy in England had positive growth each quarter, however in Sweden, there were some single quarters of negative growth, although these were not sustained across two successive quarters and therefore did not constitute a recession as commonly defined (Oxford Dictionary, 2012).

Table 1 shows the age adjusted prevalence of 'not good health' outside recession and during recession, rate difference and odds ratio (OR) of 'not good health' between recession and outside recession for all participants and by gender. In England, prevalence of 'not good health' for all participants was 22.9% outside recession with an improvement of 0.7% during recession whereas in Sweden the prevalence of 'not good health' was 21.6% outside recession with an improvement of 1.1% during recession. The odds of reporting 'not good health' in England was 4% (OR 0.96, [0.93-1.00]) less during recession than outside recession whilst it was 7% (OR 0.93, [0.90-0.96]) less during recession than outside recession in Sweden.

Stratified analysis by gender found that the health improvements during recessions was limited to women with the odds of reporting 'not good health' for women decreasing by 5%

in England (OR 0.95 [0.91, 1.00]) during recession than outside recession and by 7% (OR 0.97 [0.93, 0.97]) in Sweden. However, recessions did not change the odds of reporting 'not good health' for men in either country.

Recessions and educational inequalities in health in England and Sweden

Table 2 presents the results from the analyses of the impact of recessions on educational inequalities in health amongst all participants and stratified by gender in England. Prevalence of 'not good health' in the highest education group was 15.4% outside recession with an improvement of 1.1% to 14.3% during recession, whilst those in the lowest education group had a prevalence of 32.9% outside of recession with a decline of 1.6% to 34.5% during recession. Compared to the highest education group, the odds of reporting 'not good health' were 56% higher (OR 1.56, [1.51 – 1.61]) for the intermediate group and 189% higher (OR 2.89, [2.80 - 2.99]) for the lowest education group outside of recession. This gap increased to 64% (OR 1.64, [1.51 – 1.79]) for the intermediate education group and 219% (3.19, [2.91 – 3.49]) for the lowest education group during recession. Furthermore, the health gap between the highest and lowest education groups widens by 10% during recession (OR 1.10, [1.00 -1.21]). These patterns were common to both men and women although stratified analysis showed that this increase was only statistically significant amongst women (OR 1.14, [1.01 – 1.30]).

In contrast a slightly different pattern was seen in Sweden as shown in Table 3. Health inequalities were smaller in Sweden than in England both during and outside recession. There was a consistent improvement in prevalence of self-reported 'not good health' during

recessions across all the education groups in Sweden for both men and women. The prevalence of 'not good health' in the highest education group was 16.1% outside recession with an improvement of 3.4% to 12.7% during recession whilst the prevalence of 'not good health' in the lowest education group was 30.4% outside recession with improvement of 1.5% to 28.9% during recession. The odds of 'not good health' for the intermediate education group was 61% (OR 1.61, [1.55 – 1.68]) higher than the highest education group outside recession and 76% higher during recession (OR 1.76 [1.62 - 1.92]). Whereas the odds of 'not good health' for the lowest education group was 130% (OR 2.3, [2.20 - 2.40]) higher than the highest education group outside recession and 166% (OR 2.66, [2.44 – 2.91]) higher during recession. Furthermore, the health gap between the highest and lowest education group is 16% higher during recession than outside recession (OR 1.16, [1.05 -1.28]). These patterns were common to both men and women although stratified analysis by gender showed that the health gap amongst men only increased significantly during recession for the comparison between the highest and the lowest education groups (1.16, [1.00-1.33]); whilst the health gap amongst women was significantly widened during recession for both the intermediate (OR 1.15, [1.06 – 1.30]) and the lowest (OR 1.17, [1.03-1.33]) education groups compared to the highest education group.

Discussion

This paper has found that recessions have a small positive effect on the overall self-reported health of women - but not men - in both England and Sweden. In England, this improvement in health was only enjoyed by the most educated women with the health of less educated women declining during recession. In Sweden, the health of all women improved during

recession regardless of their educational status. However, relative educational inequalities in self-reported health increased during recessions amongst women in both countries and also amongst Swedish men. Throughout the study period, whether there was a recession or not, health inequalities were higher in England than Sweden. These key findings add substantially to the current research literature in a number of ways.

Firstly, our study partially challenges research which has demonstrated that overall population health worsens (particularly suicides and mental health) in countries, such as England, in which deficit reduction policies are implemented during a recession, whilst countries that increase public expenditure, such as Sweden, do not experience a decline in health (Stuckler and Basu , 2013). In contrast, our paper has suggested that population health (self-rated health) improves during recessions irrespective of the country's policy context. This is in keeping with other studies of recessions that have concluded that all-cause mortality as well as deaths from cardiovascular disease and motor vehicle accidents decrease during economic recessions (Bambra, 2011). The causal mechanisms are unclear but some commentators suggest that this is because, in recessions, leisure time increases as job pressures and work hours decrease, motor vehicle accidents lower and reductions in income lead to a reduction in hazardous health behaviours (Bambra, 2011). The difference between our findings and those of Stuckler and Basu (2013) may of course be in view of the different health outcomes analysed, reinforcing a theme in the literature that the health effects of recessions vary by health outcome (Riva *et al.*, 2011).

Secondly, our study has particularly highlighted the positive effects of recessions on the health of women in both England and Sweden. This is in contrast to previous evidence which has generally shown greater effects of recessions on the health of men (Eliason and Storrie, 2009; Gerdtham and Johannesson, 2005; Sundquist *et al.*, 2006) or have ignored gender as a variable of interest. Our study has shown that gender is an important factor. The gendered effects we have detected may be as a result of differences in health behaviours whereby women are more likely than men to decrease their alcohol and tobacco intake during a recession, possibly owing to lower incomes (Novo *et al.*, 2000b; Richman *et al.*, 2012; Vijayasiri *et al.*, 2012). It may also be due to differences in the employment effects of recessions, with men more likely to lose their jobs than women in the early stages of a recession as the economic contraction effects the private sector before the public sector (Philpott, 2012). There may also be psychosocial factors at play as it has long been argued that women are more resilient to the negative health effects of job loss as they have stronger community social capital and non-work social identities (Giuntoli *et al.*, 2011).

Thirdly, our study has found that socio-economic health inequalities increased in both England and Sweden during recessions, but for different reasons. In England, the health of the highest educated women improved whilst the health of the least educated declined and this led to an increase in the health divide. This is in keeping with other studies which have shown that socio-economic inequalities increase during recessions in more liberal welfare states (Anitua and Esnaola, 2000; Kondo *et al.*, 2008). This suggests that the reasons for the increase in socio-economic inequalities amongst English women are most likely to be as a result of material or psychosocial factors as lower educated women are more likely to lose their jobs during a recession and are much more vulnerable to the effects of cuts to social welfare and social services as a result of austerity measures following recessions (Taylor-

Gooby, 2012). Job insecurity also increases during recessions and job insecurity is known to be more prevalent amongst women (Bambra, 2011). Other psychosocial factors at play may be that lower educated women also have responsibility for the home and care of children which may add additional strain in a time of scarcity.

Relative health inequalities also increased in Sweden although, in contrast to England, this was because whilst the health of all women benefitted, it was the most educated who benefitted the most. This finding is similar to studies that showed the health of the least educated women in Sweden suffered during recession (Burström *et al.*, 2012), however it differs from previous research into the effects of recessions on health inequalities in more Social Democratic welfare states which has tended to find that inequalities remain stable (Dahl and Elstad, 2001; Lahelma *et al.*, 2002; Lundberg *et al.*, 2001b; Manderbacka *et al.*, 2001). This may be because our study uses data from both the recession of the early 1990s and the post-2007 'Great Recession', with the latter potentially having a more stratified impact on health. The reasons for the increase in health inequalities in Sweden – that the more educated women benefitted more - also relates to an on-going discussion within the comparative health and social policy literature about the persistence of health inequalities in the Social Democratic welfare states. In absolute terms, the life expectancy of all socio-economic classes is relatively higher than the equivalent groups in other developed countries, pre-mature mortality risks are also lower (Fritzell and Lundberg, 2005; Lundberg and Lahelma, 2001); and the most vulnerable (the old, the sick and children) also tend to fare better in the Social Democratic welfare states - particularly Norway and Sweden (Bambra, 2011). However, the focus of comparative research on relative, as opposed to absolute, measures of health and inequality has meant that the Social Democratic welfare

states are effectively 'victims of their own success', as whilst they have substantially improved the health of all, the high level of health of the middle classes has meant that relative social inequalities remain – or in the case of our study - increase. This is, as (Lundberg *et al.*, 2008) have pointed out, an achievement, not something to be criticised.

Finally, in keeping with the work of others such as Stuckler and Basu (2013), our paper has shown that the health effects of recessions do vary by country with the health benefits of recessions shared by all educational groups (although not equally and the only significant improvements were amongst women) in Sweden, whilst in England, only the health of the most educated improved (significant pattern for women only). These cross-national differences may be due to the different social policy contexts of England and Sweden: the higher levels of social expenditure and more active labour market policies of the Swedish welfare state may act as a buffer against the negative effects on health inequalities experienced in England. This is in keeping with other comparative studies which have suggested that the effects on health of key and universal social determinants such as job insecurity, workplace stress, or unemployment, differ by welfare state with worse effects in more liberal welfare states such as England (Bambra and Eikemo, 2009; Dragano *et al.*, 2011; Gesthuizen *et al.*, 2012). Our paper suggests that the health effects of economic recessions are experienced differently by gender, educational status and country context.

Study limitations

Care needs to be taken in interpreting these results. The data for England only begins in 1991, directly after a recession has taken place. This means there was only a single year of recession for England in the early part of the study. The HSE and ULF use cross-sectional

data for each year and so there are different respondents in each year. The main variable is self-reported health, a subjective measure that may be subject to cultural variation between countries and educational groups. The study period ends in 2010 and so does not have data for the English 'double-dip' recession of 2012 and so the investigation of any longer term 'lag' effects on health was prevented. The established definition of recession used in this study – two consecutive quarters of negative economic growth - is also fairly arbitrary and other economic indicators such as unemployment rates, mortgage defaults or consumption falls may produce different results. However, the study also has the strength of examining data for two recessions not just one, in two countries, and with a good sample size drawn from respected national datasets. Nonetheless, future research that uses more objective health outcomes (such as mortality), a cohort design and that is able to examine the longer term impacts of the most recent recession would be beneficial.

Conclusion

Overall, this study has found that recessions have a small positive effect on the health of women - but not men - in both England and Sweden. In England, this improvement was only enjoyed by the most educated women with the health of less educated women declining during recession. In contrast, in Sweden, the health of all women improved significantly during recession regardless of their educational status, although the most educated benefitted the most. Relative educational inequalities in self-reported health therefore increased during recessions in both countries but for different reasons. This study suggests that Sweden's stronger social policy arrangements protected the health of all during recessions. However, further research into the casual mechanisms underlying the differential spatial health impacts of recession and its longer term effects is desirable.

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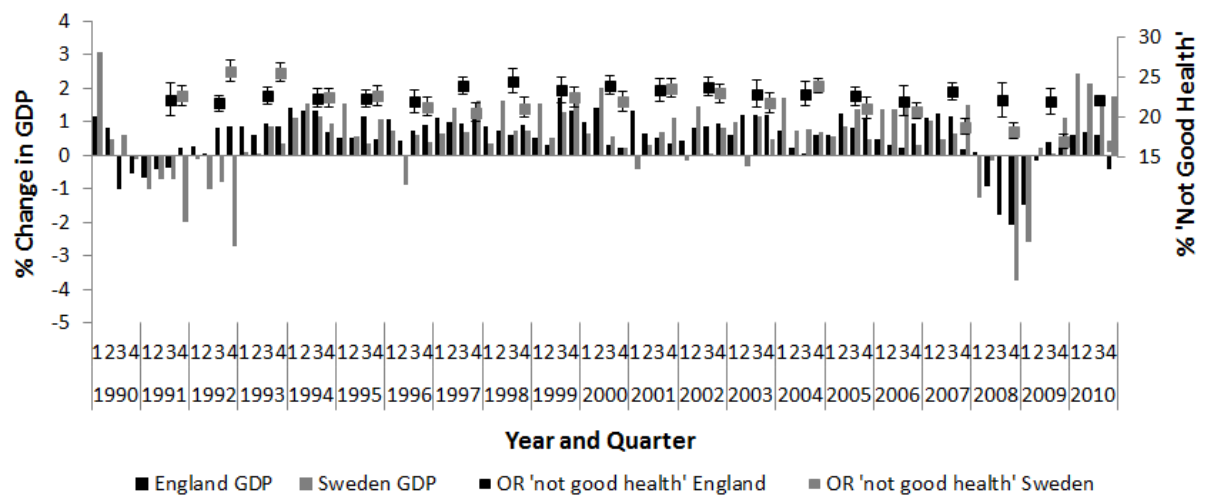
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Author Contribution Statement

CB and AC drafted the paper with input from LN, AK, SEC, MR and BB. AC conducted the statistical analysis with input from CB, AK, LN, and SEC.

Figure 1: Economic conditions by quarter in England and Sweden 1991 - 2010



Source: GDP adapted from (Organisation for Economic Co-operation and Development 2012)

Table 1: Age-adjusted prevalence (%), rate difference and odds ratios (95% CI) for 'not good health', England and Sweden, 1991-2010

	England				Sweden			
	Prevalence 'not good health' (%)				Prevalence 'not good health' (%)			
	Non Recession	Recession	RD	OR	Non Recession	Recession	RD	OR
All	22.9	22.2	-0.7	0.96 (0.93, 1.00)*	21.6	20.5	-1.1	0.93 (0.90, 0.96)*
Women	23.2	22.0	-1.2	0.95 (0.91, 1.00)*	23.7	22.5	-1.2	0.93 (0.89, 0.97)*
Men	22.6	22.3	-0.3	0.97 (0.93, 1.02)	19.5	18.4	-1.1	0.97 (0.93, 1.01)

* Significant at 5% level

Prevalence = age-adjusted prevalence of 'not good health'.

RD = age-adjusted rate difference (percentage points) between recession and no recession.

OR = Odds ratio 'not good health' between recession and non-recession with 95% confidence intervals.

Table 2: Age-adjusted prevalence (%), rate difference and odds ratios (95% CI) for 'not good health' by educational status, England, 1991-2010

Educational Groups	Prevalence 'not good health'		OR compared to Highest qualification			OR for interaction between education and Recession
	Non Recession	Recession	RD	Non-Recession	Recession	
All Participants						
Highest	15.4	14.3	-1.1	1	1	1
Intermediate	21.0	21.2	+0.2	1.56 (1.51, 1.61)*	1.64 (1.51, 1.79)*	1.05 (0.96, 1.15)
Lowest	32.9	34.5	+1.6	2.89 (2.80, 2.99)*	3.19 (2.91, 3.49)*	1.10 (1.00, 1.21)*
Men						
Highest	15.1	14.3	-0.8	1	1	1
Intermediate	22.0	22.6	+0.6	1.69 (1.61, 1.76)*	1.79 (1.59, 2.03)*	1.06 (0.93, 1.21)
Lowest	32.8	34.5	+1.7	2.95 (2.83, 3.09)*	3.11 (2.74, 3.53)*	1.05 (0.92, 1.20)
Women						
Highest	15.9	14.4	-1.5	1	1	1
Intermediate	20.2	20.0	-0.2	1.46 (1.40, 1.53)*	1.54 (1.36, 1.74)*	1.05 (0.91, 1.20)
Lowest	33.2	33.9	+0.7	2.88 (2.75, 3.01)*	3.30 (2.91, 3.75)*	1.14 (1.01, 1.30)*

* Significant at 5% level

Prevalence = age-adjusted prevalence of 'not good health'.

RD = age-adjusted rate difference (percentage points) between recession and no recession.

OR = Odds ratio 'not good health' between recession and non-recession with 95% confidence intervals.

Table 3: Age-adjusted prevalence (%), rate difference and odds ratios (95% CI) for 'not good health' by educational status, Sweden, 1991-2010

NHS Regions	Prevalence ‘not good health’		RD	OR compared to Highest qualification		OR for interaction between education and Recession
	Non Recession	Recession		Non-Recession	Recession	
Total						
Highest	16.1	12.7	-3.4	1	1	1
Intermediate	21.9	20.5	-1.4	1.61 (1.55, 1.68)*	1.76 (1.62, 1.92)*	1.09 (1.00, 1.20)*
Lowest	30.4	28.9	-1.5	2.3 (2.20, 2.40)*	2.66 (2.44, 2.91)*	1.16 (1.05, 1.28) *
Men						
Highest	12.9	11.3	-1.6	1	1	1
Intermediate	19.7	17.9	-1.8	1.63 (1.53, 1.73)*	1.69 (1.48, 1.92)*	1.03 (0.90, 1.19)
Lowest	26.7	25.7	-1.0	2.27 (2.13, 2.42)*	2.62 (2.30, 3.00)*	1.16 (1.00, 1.34)*
Women						
Highest	18.7	13.7	-5.0	1	1	1
Intermediate	24.1	23.1	-1.0	1.63 (1.55, 1.72)*	1.88 (1.68, 2.10)*	1.15 (1.02, 1.30)*
Lowest	34.6	32.6	-2.0	2.38 (2.24, 2.52)*	2.79 (2.48, 3.13)*	1.17 (1.03, 1.33)*

* Significant at 5% level

Prevalence = age-adjusted prevalence of 'not good health'.

RD = age-adjusted rate difference (percentage points) between recession and no recession.

OR = Odds ratio 'not good health' between recession and non-recession with 95% confidence intervals.

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